In this chapter, I shine the spotlight on the chemicals which are forgotten aides to women and the mechanical household technologies that they used. I assemble case studies of the sodas: sodium carbonate, sodium bicarbonate and sodium hydroxide. To understand what types of goods were on offer instead of soda I look at Carbosil, which disappeared from the market in the 1940s and Harpic, a branded product that took over one particular job previously done (at least in some homes) by sodium carbonate, that of cleaning the toilet. Harpic and the sodas remained available throughout the 1930s to the 1980s, so to provide an example of how household chemicals have been regulated I will study a grease removing chemical that started to be withdrawn from all consumer products in the 1980s, carbon tetrachloride. I use branded dry-cleaning product Thawpit and fire extinguishers to illustrate different ways that carbon tetrachloride was used in the home. I draw on household manuals, biographical accounts and reminiscences, advertisements and articles in newspaper and magazines, as well as material retained in the J. Walter Thompson (JWT) archive at the History of Advertising Trust, because JWT promoted Harpic and Thawpit.

This variety of sources allows me to create a richer picture than any taken alone would, although they all have limitations which I examined more thoroughly in Chapter #. My sources reflect the difficulty behind establishing details from the domestic users about what it was like to buy, store and use these chemicals. Such ordinary household chemicals have not stimulated diarists and oral history interviewees to either note them down in detail, nor wax lyrical about them. Grace Higgens, housekeeper to artist Vanessa Bell did not record using any products or chemicals, simply noting that she "distempered out larder, looking very nice", "scrubbed through", "polished" or was just "very busy cleaning", though her daughter-in-law remembered that she did not use liquid detergent for washing up despite Fairy being available.[[1]](#footnote-1) Jean Michie, artificial intelligence researcher, recorded various brand names in her shopping lists and accounts: Vim Flash appeared with Rennies, as did Alkaselzer alongside deodorant, gin and “fags” that she did not specify brands for.[[2]](#footnote-2) Nevertheless, users brought chemicals into their homes with the aim that these substances could be employed to protect them, from dirt when chemicals were used for cleaning or from fire in the case of extinguishers.

I chose to examine sodas because household manuals recommended “soda” without specifying any further details about where it might be obtained or what to look for, meaning it must have been obvious and commonplace to users at the time. In parallel to this, although their manufacture and sale has formed a substantial part of histories of Imperial Chemical Industries, Lever Bros, and Joseph Crosfield & Sons, their uses in the home have been largely overlooked and users often appear only as silent, characterless aggregates who either buy or do not buy, so appear in these stories only to generate income.[[3]](#footnote-3) The sodas are mentioned in social histories which include descriptions of housework, but attention here has clustered on pre-1930s practices.[[4]](#footnote-4) This means that there is an opportunity to look at the changing availability and identities of these chemicals, as well as cataloguing how they were used between the 1930s to the 1980s. Saving labour is a major aspect of the use of all the chemicals in this chapter, as is their effects on health and wellbeing of the whole household through cleanliness, in particular surfaces, garments and in the case of Harpic, the WC bowl. Reducing effort through spot cleaning instead of laundering whole garments brought my attention to carbon tetrachloride, but this chemical also had different uses and users in the home which this chapter will explore.

Household manuals prescribed timetables for efficient work and provided shopping lists of a vast array of different cleaning cloths and brushes, even diagrams of how to store these tools but the near absence of branded goods and relative silence regarding chemicals in the general cleaning cupboard was striking. The stain removal sections of household manuals detail the types of activities and materials experienced in the home and how they changed over time. Knowledge about fabric composition, being able to discriminate between natural fibres, of plant or fruit based stains was supplemented by a working understanding of an increasingly confusing array of combinations of synthetic fibres, and a new barrage of stains from processed foods and work-related tasks. Entries for carbon paper and mimeographic correction fluid, indelible pencils and a variety of inks; indian, marking (based on either silver nitrate or aniline), printing, writing and ballpoint trace a history of office work. Fashions in medicine can be traced too from inclusion and disappearance of iodine, mercurochrome, cod liver oil.[[5]](#footnote-5) These catalogues of messy mistakes made in daily life were especially important when laundering a whole garment was difficult and time consuming or otherwise expensive, essentially spot cleaning was a labour saving activity as the lengthy sequence of manually involved processes involved in cleaning entire items could be sidestepped or at least delayed. As plumbed-in automatic washing machines became increasingly available and synthetic detergents developed to cope with an array of stains at lower temperatures, attitudes to laundry changed. Cowan and others have argued that improvements in washing machines and access to them did not necessarily reduce the total amount of housework, but instead caused whole garment laundering to be done more frequently. If stain removal in particular is considered, machines and increasingly complex detergents reduced the operator's involvement in stain removal to first aid before laundering.

While it is tempting to straightforwardly tie increased textile variety and therefore complexity of fabric care to an increased variety of branded stain removal chemicals, this is not necessarily true. After all, plain old clean water was consistently recommended as the starting point for treating all stains, especially fresh ones. Plus, users could simply avoid fabrics with demanding care requirements, or even discover through disobeying the laundering instructions that they were actually flexible. Nevertheless, there were users who took pride in understanding how to treat stains and who perpetuated the publication of exhaustive tables of advice. The motivation behind this expertise was usually framed in terms of simple economics, as saving an otherwise ruined garment and the financial cost of saving (and effort) of taking stained items to professionals. The emphasis on cost may have influenced how “proprietary products”, meaning having a tradename, were vaguely referred to in manuals and household hints. Additionally, this vagueness also hints at changes in retail. Formulae provided openly in *Chemist and Druggist* would be a given slightly different name by each proprietor who made it up so they could claim it as their own. Pharmacist John Newstead demonstrated this with the example of Pine-ozone and Pinozone: although neither listed the ingredients on the label, both referenced the formula PJF 10585 and gave identical instructions for use, identifying the products as the same.[[6]](#footnote-6) Where once a store keeper could have discussed individually which proprietary product a stain removal guide probably referred to, self service shopping changed the relationship between customer and shop staff, as well as the knowledge that both were expected to have about products.

In fact, the recommendations for stain removal remained remarkably consistent and the greatest changes in the chemicals that might be kept in people's homes are better traced through the ubiquitous “poisons and antidotes” table in the household medicine chapter, rather than the pages which laid out best cleaning practices. While the poisoning treatments might not explain what useful purpose the potentially harmful chemicals were kept in the house for, they also represented the dominant form of feared interaction with chemicals, that of acute and fatal poisoning through ingestion. The preoccupation of users and non-users with acute poisoning recurs throughout this thesis, rather than any murky, hard to pin down toxic effects from the long-term, low-level exposure to chemicals. In cases where the poisons were not also medicines at a lower dose, they most often reappeared in domestic manuals as a way to remove stains, either from textiles or hard surfaces.

While the bulk of housework was undertaken using innocuous water, soap, soda and hard work, concern about the control of other potentially dangerous household chemicals has been longstanding. In 1926 E.T. Neathercoat, a former president of the Pharmaceutical Society of Great Britain, opined that “However drastic our poison regulations they will never be fool-proof”. The impetus for his commentary was the Poisons Law newly enacted that year, which prevented poisons being sold by chemists unless they were clearly labelled as such. Neathercoat welcomed the sentiment behind improved labelling, but worried about the “ignorance and carelessness” of domestic users, of the “despairing” and about “inquisitive children”. His concern lay chiefly with acids: carbolic, oxalic (salts of lemon), hydrochloric (spirits of salts), sulphuric (vitriol) and nitric. He expressed a view that was published surprisingly rarely, that “If effective for the purposes for which they are sold, all of them are virulent poisons of causing an agonising death”.[[7]](#footnote-7) Neathercoat did not expound upon what exactly was being done in homes with these chemicals, why users chose to keep these potentially harmful chemicals in their possession, how they knew about them or the variety of places other than reputable, responsible chemists that people could obtain them. Other than suicidal users, Neathercoat did not mention other forms of deliberate misuse, despite the high profile (if not frequency) of acid attacks. Neathercoat described users which double as categories fitting for this thesis: “ignorant”, which I interpret as not-knowing, “negligent” and “careless”, which I group together as inattentive, and I adopt his “inquisitive children” as well as “despairing” users. User categories get further discussion in their Chapter # once we have explored the range of chemical case studies.

The first case study is of the soda family. Sodas count among some of the most innocuous and the most dangerous of chemicals used at home. Ranked in order of least dangerous to most, these are baking, washing and caustic. Soda ash, which requires common salt and limestone as the raw materials is the basis of production for all three. Although soda ash was historically produced by the Leblanc method, the Solvay method which is also known as the ammoniated brine process, was the predominant means of soda production in Britain between the 1930s and the 1980s, and is still in use today. The Solvay method was adopted in Britain in the 1860s when the company Brunner Mond built a large plant in Winnington, Cheshire. The facility was located to use the natural salt deposits which could be extracted as brine. During the process, brine was mixed with carbon dioxide generated by heating limestone. To ensure a supply of limestone for soda ash production, Brunner Mond acquired shares in the Buxton Lime Firm, in nearby Derbyshire, and that company became part of ICI in 1926, laying the foundation of the Lime Division.[[8]](#footnote-8) ICI sold plain sodium carbonate to domestic users through retailers including Boots the Chemist as loose soda, or boxed and branded with ICI’s circular logo in 2 lb packets. Soap makers such as Joseph Crosfields & Son required such a lot of soda to process fats and oils into soaps that they manufactured their own, and rather than waste by-products, they incorporated these chemicals into new consumer products. Carbosil was borne of finding a profitable use for the volume of caustic soda (then converted to carbonate, washing soda) and waste silicate produced by Crosfields. The double salt of sodium carbonate and sodium silicate was successfully marketed between the 1890s and 1940s. There were soda plants elsewhere, such as Thawpit's in High Wycombe, which as well as being a recognisable brand of household chemicals in their own right, also supplied Boots the Chemist shops with loose, unbranded soda.[[9]](#footnote-9)

Although the manufacturer of washing soda might not always have been clear to the user, especially if they were buying loose soda they were at least clear that it was washing soda, soda crystals or sodium carbonate. In contrast, the chemical identity of Carbosil was never described in adverts or packaging, although the name is an amalgamation of **carbo**nate and **sil**icate, despite any potential for names of cleaning products beginning with carb to be associated with carbolic, the phenol-based disinfectant.[[10]](#footnote-10) Although in advertising Carbosil, Crosfields aimed to set their product apart from common soda by asking “Why use soda when Carbosil costs no more?”, users understood Carbosil to be a type of washing soda, or sometimes bleaching soda, through its properties of grease-cutting, water-softening properties, where textiles washed whiter by the avoidance of soap scum, which is why I include Carbosil in the discussion on washing soda.[[11]](#footnote-11)

To illuminate the domestic users and uses of sodas, I compiled Table 1 from news stories and advice columns. Housewives and housekeepers were not the only users, as gardeners also found them handy. Caustic soda was used rarely in comparison to the gentler sodas, but that its strength meant that it was also used for harm by those seeking revenge or to scare. Bicarbonate of soda was able to take the place of washing soda, and while washing soda could be ingested in small amounts without harm, it generally was not substituted deliberately for baking soda. Very often in household manuals, the type of soda recommended was unspecified, which required those undertaking the housework to simply know through experience and common sense regarding the context, that they should use washing soda, or sodium carbonate. The names were more reliably given for the other sodas, caustic soda was too strong and inappropriate for most cleaning tasks, and baking was reserved for culinary and cosmetic purposes.

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Caustic** | **Washing** | **Bicarbonate** |
| 1890s |  |  | Medicine cabinet |
| 1920s |  | Make Javelle water: boil 4lb bicarbonate soda in 1 gallon water, then add 1lb pulverised chloride of lime[[12]](#footnote-12)  Clean and stiffen household brushes, clean range and gas cooker[[13]](#footnote-13) |  |
| 1930s | Kill tree stumps, even oak[[14]](#footnote-14) | Dropped dry onto dandelion crown to kill the weed[[15]](#footnote-15)  Mixed with copper sulphate to treat plant rust, esp snapdragons[[16]](#footnote-16) | Douche - Influence conception: have a boy[[17]](#footnote-17) |
| remove old paint from furniture[[18]](#footnote-18) | Wash bedsteads with soda solution to combat bed-bug infestation[[19]](#footnote-19) | Clean vacuum flask[[20]](#footnote-20) |
| neutralise acid from the "wireless accumulator" to stop it burning a hole in the carpet[[21]](#footnote-21) | soothe sore eyes from over-chlorinated swimming pools.[[22]](#footnote-22) | Remove iodine stains from textiles[[23]](#footnote-23) |
| Used to write anti-Semitic slogans on golf course[[24]](#footnote-24) | remove smoke stains underneath mantlepiece[[25]](#footnote-25) | Remove scorch marks textiles[[26]](#footnote-26) |
| Slow coal burning, save fuel[[27]](#footnote-27)  Clean oven, save fuel[[28]](#footnote-28)  Soften water, save soap[[29]](#footnote-29) | Rinse eyes after mustard gas[[30]](#footnote-30)  Remove grass stains from textiles[[31]](#footnote-31)  Clean silk stockings[[32]](#footnote-32) |
| Homemade cleaner inc meths, paraffin, ammonia, borax. [[33]](#footnote-33) |
| dissolved in water as “Russian method” to treat mildew on roses[[34]](#footnote-34) |
| Essential larder item[[35]](#footnote-35)  Use less sugar to sweeten fruit[[36]](#footnote-36)  Cook legumes, save meat[[37]](#footnote-37)  First aid kit[[38]](#footnote-38) |
| 1940s | Thrown at person[[39]](#footnote-39) | Mixed with copper sulphate to prevent sand bags rotting[[40]](#footnote-40) | Included in commercial fire extinguisher[[41]](#footnote-41) |
| Winter wash for trees[[42]](#footnote-42) | Make tea appear stronger[[43]](#footnote-43) |
| 1950s | Fish killed by caustic soda in business dispute[[44]](#footnote-44) |  | Mix 1 tsp with ½ teacup malt vinegar to make chilblain treatment[[45]](#footnote-45) |
| A 'last resort' for clearing blocked drains[[46]](#footnote-46) |
| 1960s |  |  | Clean refrigerator[[47]](#footnote-47)  Clean melamine, cheaper than Vim[[48]](#footnote-48) |
| 1970s |  |  | Clean freezer[[49]](#footnote-49) |
| 1980s | Cow and Gate baby food contaminated by extortionist/ blackmailer[[50]](#footnote-50) |  |  |
| 1990 |  | ICI promoted soda crystals as 'environmentally friendly' cleaning product[[51]](#footnote-51) |  |

Table 1: Showing uses as they were recommended and reimagined by users.

Branded and marketed or not, washing soda was the versatile workhorse in the British home in the 1930s and 1940s. Washing soda did not disappear from housekeepers' options, but as shall be shown in this chapter, a combination of influences meant it receded from first choice, to be later reinvented by both users and manufacturers as an alternative, simpler option to the complex, branded cleaning formulations available. Alma Chesnut Moore's book *How to Clean Everything* outlined the whole “sodium family” and suggested even more soda types that a housewife could ask her chemist for in the 1950s, including TSP (trisodium phosphate) and sodium perborate, neither of which I have seen mentioned as available alone rather than combined with a laundry detergent in any other publication.[[52]](#footnote-52)

Very often these household hints or instructions did not give precise measurements of the amount of soda to be used, nor were ratios suggested for the volume of crystals with respect to the volume of solvent. Descriptions such as handfuls, “a little soda” or “a tiny knob”[[53]](#footnote-53) abound in manuals and hints columns, meaning that each person's use and end result depended on their personal interpretation of the instruction. Sometimes more precise detail was provided about the amount which should be used for successful results, as in these examples where the lump of washing soda was described as “about the size of a sixpenny piece”,[[54]](#footnote-54) or “about the size of a walnut”.[[55]](#footnote-55) Carbosil was powdered, and users were instructed that they only needed “a sprinkle” but the directions also specified this amounted to “a teaspoonful”.[[56]](#footnote-56) Powders dissolved more easily than solid lumps of common soda, so dissolving quickly was a labour saving quality unique to Carbosil, while the sprinkle related to its packaging (Figure 1). A labour-saving reputation, as well as not being “old-fashioned lump soda”[[57]](#footnote-57) may also explain why it appears in a hypothetical upper-middle class Edwardian Mrs AB’s shopping list, with other branded items Zebra grate polish, Globe polish and Gold Dust soap powder. Hard soap for washing, scrubbing floors and washing up, starch, blue and bath brick did not have brands specified.[[58]](#footnote-58)



Figure 1 Carbosil packaging picturing an androgynous hand showing how to open the box so the powder could be freely sprinkled. It reads "To open push in with thumb as shown then lift flap marked **ooooooo**”

Social worker and documentarian Reeves recorded the quantities that women routinely bought in 1914, often 7 pounds at a time and 3d was a usual price for this amount,[[59]](#footnote-59) making it popular with working class women as it was cheap, and “made to do a great deal” including children's baths and hair washing.[[60]](#footnote-60) The bulk buying of loose soda steadily reduced over time, and packaged quantities in either tins or cardboard boxes of 2lb packs became the main form that soda could be bought in the 1930s. Carbosil advertisements drew attention to the bulkiness of ordinary washing soda, indicating that this was a factor users considered undesirable and a reason for choosing the powdered brand. Carbosil came in neat packets priced at two pence which, the advert pointed out, worked out at “sparkling china and grease-free washing-up for a penny a week” (Figure 2).[[61]](#footnote-61)

Figure Carbosil (l:1932, r:1933) The adverts give the user some good reasons for choosing Carbosil, and try to make it clear that it is not just common soda.

Figure Carbosil (1941). The imagined user is not shown although she is analogous to the foamy soap, rescued but simultaneously made to work harder rather than less by muscular dynamic Carbosil.

World War Two affected Crosfields and ICI through Government control orders on metals and paper, which in turn impacted on the supply of soda to domestic users. An advert (Figure 4) placed by ICI announced that in response to the 1940 paper control order they would forego all prepacking, and therefore branding, until they could box their soda crystals in cardboard of appropriate quality. The aim of the advert was to reassure soda users that although they could not buy branded boxes, the loose soda they bought from their grocer was the same ICI quality.[[62]](#footnote-62) This was important because soda was frequently promoted through household hints in newspaper articles as unlike soap, soda was not rationed.

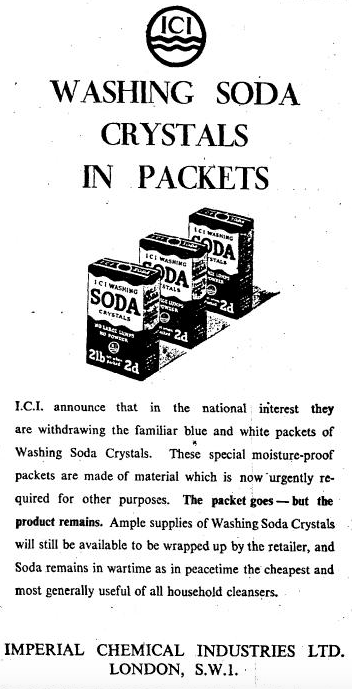


Figure Advert to reassure users that while the branded box was gone, the soda itself was still on sale.

Household sodas and their users, who included a housewife in a homely kitchen scene and a bespectacled counter clerk in a village shop, featured in ICI's profile-raising, morale-boosting and educational advert series “In The Services of an Industry” which ran from 1942 to 1943. In advert No. 34 “First Aid” readers were told that “in a pinch” when proper equipment was not available they could improvise first aid treatments with sodas (Table 1). These adverts were produced to impress upon the general populace and users of sodas, that the chemical industry was integral to everyday life. No other company attempted to undertake such an ambitious public relations exercise, showcasing generic chemicals rather than trademarked products, but ICI were also a relatively young conglomerate and had also won many wartime government contracts.

While ICI kept their activities in the public eye, Crosfields quietly discontinued Carbosil in 1941 without any goodbye, although they advertised in that same year. A.E. Musson, historian of Crosfields, identified that the decision to stop manufacture followed demands from military procurement officers for increasingly standardised soaps produced by the company as well as glycerine for explosives, both activities which diverting energy and raw materials away from other civilian products such as Carbosil. User demands or at least those of the procurers, lay at the heart of the decision to cease production this otherwise successful household chemical. Musson skirted around why Carbosil production was not resumed after the war, but linked these governmental requirements to a larger picture of disappearing brands and reduction of competition.[[63]](#footnote-63) By 1947 however, a more general shortage of soda ash, blamed on steel shortages that prevented new manufacturing plant from being built, affected multiple industries that relied on the chemical: glass manufacturers reduced output and dismissed workers, jam jar shortages was feared, laundries had to find substitute water softeners and suggested that housewives would too. Army wives who complained about lack of soda in Germany were told that housewives in Britain experienced the same shortage and indeed, any kind of washing soda became increasingly difficult to get towards the end of 1949. However, other than an occasional letter which expressed annoyance at traipsing around town looking for an elusive product, there was little other evidence of domestic users’ discontent with the general soda shortage. [[64]](#footnote-64) In Portsmouth, an alternative explanation was proffered following council investigations into their local soda crisis: warm weather had caused the crystals to solidify into a single mass, so were unsuitable for sale. The local council assured housewives via the local newspaper that supplies were returning to normal.[[65]](#footnote-65) In early 1950 Olby's store located in Dover saw fit to advertise in the local paper the arrival of a “large consignment of ICI Washing Soda : 2lb cartons 4d”.[[66]](#footnote-66) Declaring the brand as ICI communicated to readers the trusted quality of the product, and indicated that the shopkeeper knew that customers cared about this detail. Ordinary washing soda had been such a common product that it had not warranted large scale advertising, whereas Carbosil as a branded product with added value (it was powdered and it contained silicate) had been promoted in this way. ICI only advertised their soda crystals when they needed to explain why the way that they were sold changed.

The 1950s was also the point when announcements about soda were taken over by retailers, rather than the manufacturer. Advertisements from retailers like Olby's and Woolworths demonstrated that washing soda was no longer such a common product, that shoppers needed reminding about it and had to be encouraged to use it through price promotions. Instead of its own advert, soda was marketed alongside a variety of other household cleaning products, such as in a 1959 Woolworths advert where “Quality washing soda” was offered. Soda was represented by a plain packet without any visible distinguishing brand names or manufacturer. The advert continued “You can't get better value anywhere – Woolworths washing soda”, which suggested that the soda was good enough to be branded with the familiar Woolworths brand and therefore the quality of the product could be trusted.[[67]](#footnote-67) In 1965, another Woolworth's advert gave the majority of the full page to images of premium branded cleaning products; Ajax, Brillo, Scotchbrite and Jeyes but listed a selection of further offers in the bottom right corner such as Winfield washing soda, which was Woolworths own “value” brand.[[68]](#footnote-68)

The increasingly lowly position of washing soda can be illustrated in further detail through the situation faced by Boots the chemist. Boots experienced reduced demand from users, as well as pressures from manufacturers relating to increased costs associated with production and distribution of washing soda. Reluctant to raise the price of such a basic good, Boots questioned whether it was worth continuing to retail loose soda at all, as it was more convenient to sell prepackaged 2lb cartons.[[69]](#footnote-69) In 1967, following further price increases from ICI, Boots chose to forego the loose soda, making this effectively unavailable to domestic users. While their suppliers ICI and Thawpit did not directly substitute more complex products in place of soda, the prepackaged branded soda had to compete with, and was out-numbered by, alternative, novel products. Boot's own market research surveys on household products did not even include soda in 1968, and instead focussed exclusively on detergents, soaps and dedicated products such as oven cleaner and toilet cleanser which had all been identified by company strategists to be growth areas and what domestic users wanted, or should want.[[70]](#footnote-70)The apparent absence of complaint about this change can be explained if new detergents and cleansers addressed long standing dissatisfactions with older products including soda. These were listed in a 1933 Carbosil advert as “makes washing up quick, easy, pleasant, makes china, glass and silver dry brilliantly polished, better for washing up than soda or soap – does more work, never harms colours on china, does not make hands red or rough, specially good for aluminium.”[[71]](#footnote-71) Soap rationing and the soapless synthetic detergents which replaced that cleanser, combined with the soda shortage towards the end of WW2 would have motivated users to find and accept substitutes. Then, when soda became more readily available, not everybody wanted to go back to using soda. Products that incorporated water softeners and grease solvents meant that additional, bulky soda was unnecessary. There were choices of new products, at not much extra cost, that made dull, tedious tasks easier, more pleasant or noticed and appreciated the addition of fragrance. Soda could still be obtained by those who really wanted it, such as housekeeper Grace Higgins who was remembered by her daughter-in-law as continuing to use it despite the existence of Fairy liquid.[[72]](#footnote-72)

What can be further discussed in this chapter is the demand from users for value for money and their quest for clearer or more meaningful information about new products. The consumer rights organisation *Which?* was established in 1957, and they compared all manner of new products.

Taking a cue from the successes of *Which?* established in 1957, most newspapers followed suit and ran a column that advised on household products. Trialling new products at home was part of Heather Standring's work as a consumer affairs columnist. She wrote sceptically about dedicated products which promised ever easier cleaning and instead recommended multipurpose products such as 1001 cleaner, or chemicals including washing soda, and extolled the virtues of hard work.[[73]](#footnote-73) Sometimes she demystified products and provided warnings that were not emphasised on the packaging as strongly as she felt should be. While washing soda was often used to clean ovens, Standring warned her readers that Easy-Off oven cleaner contained caustic soda and recommended that they wear rubber gloves.[[74]](#footnote-74)

Soda’s effectiveness did not change but attitudes towards it did. Paralleling the surge in variety and stemming from national financial stresses in the 1970s advice columns and books about housework demonstrated a renewed interest in washing soda as a frugal and general purpose alternative to convenient but expensive branded cleansers in economically difficult times, which firmly associated soda with not being able to afford other products.[[75]](#footnote-75) Instead of being used as an everyday, multipurpose household chemical, soda crystals tended to be used for occasional, dedicated jobs, such as clearing greasy sluggish drains without the worry associated with using caustic soda.

Soda users included those who wanted to become more self-sufficient. The British self-sufficiency movement took off in the 1970s following the publication of *Small is Beautiful*, which motivated adherents to those principles to become soda users in an attempt to reduce their reliance on the heavily branded and packaged commercial goods made by globalised corporations. Soda crystals tended to be packaged relatively simply, without much promotion, although it was difficult to escape large chemical industries. When ICI rebranded their soda crystals as environmentally friendly in the 1990s, an anti-corporate agenda meant that Greenpeace could not get behind this effort to encourage greater use, so instead drew attention to the manufacturing energy costs behind the product and the company’s history of pollution.[[76]](#footnote-76) Nevertheless, the activist organisation promoted soda crystals without these caveats when it suited them, such as in their *Stepping lightly on the Earth* guide.

Growing environmental concern meant that soda was hailed as a comparatively simple “green” option. The transformation of soda from ubiquitous everyday use, to a reputation of environmental friendliness, has so far been overlooked by historians of all disciplines*.* However, the boundaries of this thesis mean that further exploration of washing soda as eco-friendly will be for another time.

While washing soda was certainly multipurpose, it was not noxious enough to be involved in accidents or serious misuses. Misgivings about sodas of all kinds had regularly occupied the correspondence columns of newspapers in the 1890s, but largely gave way to an acceptance that provided washing soda was not used in place of baking soda, it was not harmful. For example, it was added to tea to make it appear darker and stronger without ill effect (see Table 1). Harold Wilson admitted to mistakenly adding washing soda to cabbage in place of bicarbonate of soda, much to the dismay of his scout troop for whom the now foul-tasting vegetable was destined.[[77]](#footnote-77) That said, when washing or bicarbonate of soda was used in the homemade cleaning preparation known as Javelle water (soda, water, chloride of lime), mistaken ingestion of this concoction could prove fatal.[[78]](#footnote-78) The soda generally responsible for harming users, or rather unwitting users, was caustic soda, also known by its proper chemical name sodium hydroxide.

### Caustic soda

Caustic soda is sold as either a liquid, or in solid white flaked chips, is a strong alkali and can burn living tissue if it is not neutralised or rinsed off immediately. This requires care to be exercised in both its retail and its use. As it was on the Poisons List, only registered vendors could sell it and the bottle had to carry an address label showing from where it was sold.[[79]](#footnote-79) The transaction between seller and buyer due to its status as a poison was supposed to, but did not always ensure that both parties were aware of the nature of the chemical, and not accidentally obtain the wrong sort.[[80]](#footnote-80) Domestic users were instructed to wear gloves when handling caustic or its solutions. The dangers associated with this chemical being “at large” in the domestic environment had been long known; household advice from 1843 had advised never to keep “vitriol, soda, nor pearl ash” in the kitchen.[[81]](#footnote-81) Although it burns in the mouth, in practice this sensation does not always lead to it being spat out, as a reflex swallow is the alternative response, with dire consequences.[[82]](#footnote-82)

This danger appears to have been well heeded, at least during the period with which this thesis is concerned, as reported incidents occurring in the British home were rare. It was responsible for 7 deaths in children under 10 years old between 1931 and 1935,[[83]](#footnote-83) with the chemical being classed as a “corrosive”, joining cresol, phenol and unspecified acids to kill a total of 16 children between 1958 and 1977.[[84]](#footnote-84) These figures show a decreased prevalence of poisoning with caustic soda, from nearly 2 each year, to averaging 1 every three years. While the number of fatal cases decreased, nonfatal accidents involving caustic soda flakes continued to be reported sporadically in newspapers and acted as cautionary examples.[[85]](#footnote-85) These short news pieces did not elaborate on the responsibility to store caustic or other household chemicals properly, the readers were expected to fill in this detail themselves.

Nevertheless, even if individual households practiced safer storage, danger could lie beyond their own private walls as inquisitive children Scott Budfield (age 3), Julia Carter (age 5) and Kim Tyler (age 7) discovered. They were rushed to hospital for treatment after a jug that they found outside their block of flats did not contain dried coconut as they first thought, but caustic soda flakes instead.[[86]](#footnote-86) Following another incident, police warned residents in Barnsley about the dangers of caustic soda when a group of children explored a house due for demolition and found a tin, which the youngsters opened out of curiosity and resulted in several being treated at hospital for chemical burns.[[87]](#footnote-87) These events did not stimulate reporters to seek out statistics or spokespeople from manufacturers, government bodies or voluntary organisations such as the Royal Society for the Prevention of Accidents (RoSPA). While accidental domestic poisonings were one of RoSPA’s concerns, their low frequency compared to road accidents meant this charitable organisation’s resources were organised accordingly. The annual government grant of £5000 for home safety “propaganda” was considered inadequate, although local authorities were also identified as being in a position to do more to reduce accidents.[[88]](#footnote-88) The Home Safety Act (1961) stimulated 19 local authorities and 24 local home safety committees to subscribe to ROSPA, and therefore funded and benefited from the organisation’s research and education work.[[89]](#footnote-89) However, on the domestic front falls and pharmaceuticals received more emphasis from ROSPA than household chemicals. This is not surprising, as the advice could only be very limited and common sense: store the chemicals out of children’s reach, do not leave chemicals unattended when in use, do not decant chemicals into inappropriately labelled bottles.

Hugh Jackson, founder of the Child Accident Prevention Trust, voiced frustration at the lack of a comprehensive approach to research and action taken by disparate organisations, giving the example “The DPCP [Department of Prices and Consumer Protection] is sponsoring research into home accidents at all ages, while the DHSS [Department of Health and Social Security] is proposing to inquire into accidents to children. The DPCP study will examine poisoning in childhood from domestic products but not from medicinal products, which will be considered by the DHSS.”[[90]](#footnote-90) Jackson saw that it was impossible to control chemical users at home so directed his attention upstream, to manufacturing and packaging standards. ROSPA were consulted during government projects which questioned packaging and labelling of household chemicals.

Only caustic soda could be used for vandalism and deliberate harm (see Table 1). The corrosive chemical was employed in disfiguring attacks, typically following the pattern of a spurned lover attacking the object of their desire.[[91]](#footnote-91) Although chemically an alkali, caustic soda was often referred to as acid by both the misuser and by journalists when it was used in this way. When John Lloyd threw caustic soda over his wife in their scullery he told her “That's acid. It will kill you” although he claimed in court that he only wanted to “frighten” her and “did not think it would cause such an injury”.[[92]](#footnote-92) Another motivation for attacks with caustic soda was protection someone with caustic soda was seen when caustic was sprayed by anti-racism protestors during a clash with police at a National Front march in Lewisham, 1977.[[93]](#footnote-93) While not always taking place in a domestic environment, these actions involved premeditation and preparation at home, for instance making up a solution from crystals and putting it into a container to use later, or taking a ready-to-use domestic product such as oven cleaner to an event.

An element of fearfulness was associated with caustic soda which pushed some domestic users towards other dedicated products. While removing paint with hot caustic soda solution might be suitable for professionals, a lifestyle journalist wrote in 1967 “we would be terrified to get within smelling distance”, and instead recommended several branded paint strippers.[[94]](#footnote-94) These were at least as corrosive in order to remove the paint, not to mention odiferous, but by choosing these products instead the domestic users avoided the difficulty and inconvenience associated with heating up and transporting a corrosive solution.

### Bicarbonate of soda

Moving on to the gentlest of sodas, which was present in first aid kits and simple home medicines, the compilation of recommendations relating to this soda also show that between the 1930s and 1980s in Britain cleaning uses were restricted to the body (face washes, dentifrice) and delicate stain removal from textiles, or specific tasks such as cleaning a relatively new technology, such as a thermos flask or refrigerator where any taste or smell taint should be avoided (see Table 1). The recommendations to use bicarbonate were very numerous during the 1930s and 1940s but they dried up in the 1950s, appearing once more in the 1960s when the cleaning properties were rediscovered in the context of caring for fridges and freezers composed of mixed materials which might need different care like plastics, metal and rubber. New plastics and composite hard furnishing materials were often promoted as only requiring soap and water to clean them so as to not deter purchasers who might worry about providing special care for these untested materials.[[95]](#footnote-95) Although new materials were far easier to sanitise than wood and were embraced by housewives keen to save labour,[[96]](#footnote-96) baking soda became an ideal compromise when it became clear that traditional scouring powders and the culture of scrubbing associated with cleanliness were not suitable for the new, softer plastics which were easily damaged by gritty powders then made more prone to picking up dirt.

In contrast to the UK, in the USA baking soda was heavily promoted as a far more versatile domestic chemical through adverts and booklets produced by manufacturers Church & Dwight. In Britain, promotional materials were less strident and single minded. For instance, the *Harpic Home Book* incorporated suggestions to use unbranded chemicals as well as those produced by Harpic, and similarly in the *CWS Household Hints* booklet there were always alternatives to the CWS products it aimed to promote, although the substitute options were also conveniently available from the CWS as part of normal grocery shopping. Potatoes were touted as a starting point to fix all sorts of household problems such as minor burns or spots on clothes.[[97]](#footnote-97) In the USA Church & Dwight produced a selection of booklets in which bicarbonate was the only remedy required, no other options were offered. *A friend in need* published in 1933 concentrated on bicarbonate's medicinal uses. Two years later *It's all in knowing how* promised “new uses” for baking soda included cleaning all kinds of surfaces, as well as the suggestion to keep a box of bicarb handy in the kitchen, workshop and car glove compartment to put out fires as the powder would smother the flames.[[98]](#footnote-98) In 1952 a comic book-style booklet showed a family appreciating soda's usefulness, but without any new uses aside from being applied to modern consumer goods such as coffee makers.[[99]](#footnote-99) In these scenarios baking soda met all the challenges that might be encountered in the house, garden, garage or farm. This is quite different from ICI’s suggestions given for use in their “In the Services of an Industry” adverts, where baking soda was a leavener but should be used only as an improvisation, instead of bought as the first choice for all these domestic tasks.[[100]](#footnote-100)



Figure These brightly coloured, attractive booklets were quite different to the comparatively drab British home manuals put out by Harpic and CWS

The expansion from only health and cooking uses to cleaning in the 1930s matched that of the UK and it is hard to say why or how this change was made, or on which side of the Atlantic it occurred first. It does not appear to be related to the American natural resources, deposits of hydrated sodium carbonate and bicarbonate known as the mineral trona, as until 1948 all soda produced in the USA still used the Solvay process. Mining trona meant that the energy-hungry, synthetic Solvay processes could be abandoned in favour of simpler methods of carbonate production.[[101]](#footnote-101) However, the abundance of trona and the cost savings that it facilitated could have impacted on the British producers of sodas by increasing competition through cheaper sodas. As discussed in the washing soda section, ICI informed Boots that it had to raise prices to cover costs of production, which we can see now in the context of trona mines becoming active at around the same time. However, this does not answer the question of why Americans were interested in a wider variety of domestic baking soda uses than the British. In Britain the long established, social image or belief that bicarbonate of soda was for medication, which should be purchased in small quantities in order to not allow it to deteriorate, which was also vital to its leavening ability. While the presence of sodium bicarbonate in the home as a medicament meant that it was then available for other uses, the small quantities it was stored in and used as well as the name, strictly separated it from washing soda which was bought and used in larger volumes. Bicarbonate was advertised as “indispensable for medical and culinary purposes”, but its multitude of other household uses in cleaning were not mentioned.[[102]](#footnote-102)

One recommendation in particular that would have required a sizable quantity, indeed a boxful, was to extinguish a fire by dumping sodium bicarbonate onto it. This safety tip was not included in British publications, as it simply did not match up with the small quantities generally found in the home. Nevertheless, this did not mean that sodium bicarbonate could not be used as a fire extinguisher in the British home. The Selfac fire extinguisher available to British householders in the 1940s incorporated an explosive charge triggered by heat which automatically ruptured the container which released the powder to cover and smother the fire.[[103]](#footnote-103) Nothing about the name indicated that the agent involved would be common baking soda. Other bicarbonate based fire extinguishers were also marketed, both dry powder and a liquid bicarbonate solutions, of varying degrees of effectiveness. A powder bicarb fire extinguisher was even implicated in a robbery when it was allegedly discharged by the perpetrators to temporarily incapacitate the guard while the theft occurred.[[104]](#footnote-104)

 Illustration 2: Selfac fire extinguisher in the collection Science Museum, London

The innocuous kitchen chemical cropped up in political news stories when baking soda solution was supped by Irish prisoners in the Maze when on hunger strike[[105]](#footnote-105) and used to soothe eyes of rioters affected by tear gas deployed in Bogside,[[106]](#footnote-106) a practice that recalled the advice given to civilians in the approach to the Second World War in case mustard gas was used (see Table 1). Later, journalists appeared fixated by the juxtaposition of criminality and domesticity in the use of baking soda for the production of crack cocaine, not an everyday use by any means, but the chemical's role became a consistent feature in reports on the novel drug.[[107]](#footnote-107) There were no calls to attempt to control bicarb's availability because of its part in this minority criminal activity, which would have been futile.

What has been noticeably absent from much of this discussion so far, has been branded goods. Baking soda in the USA was promoted by Church & Dwight as either Arm & Hammer or Cow brands, but there was not a similar strong brand identity in Britain. Baking powder, a pre-prepared mixture of soda and cream of tartar, on which baker’s reputation could be made or broken was a different matter and evidence of many brands can be seen in advertisements and in museum displays. We saw that Carbosil tried to set itself apart from common soda through advertising, and ICI branded washing soda was believed to be well regarded enough to warrant a press announcement to explain the disappearance of the brand, but the same branding was not seen with caustic or bicarbonate sodas. While Alma Chesnut Moore hinted that soda compounds were the basis of favourite household cleansers, she did not illuminate her audience by naming them.[[108]](#footnote-108) In research trips to museums and in searching for evidence of branded goods, I found these domestic chemicals very elusive amongst the ranks of household objects collected for posterity.

### Harpic

One product that was very much in evidence in these collections was Harpic along with other cleaning agents, usually gritty scourers packed in cylindrical tubes. Harpic was not an abrasive product and it was developed to do away with scrubbing one particular household object, the porcelain toilet bowl. As water closets moved into the house, bringing their associated wastes and germs further into the home, the responsibility to keep toilets clean grew stronger which helped to create an eager set of users for Harpic. Washing soda was one of many household chemicals used to clean toilet bowls, and even to scrub the wooden seat snowy white, but Harpic became so widely used it even advertised the fact that it was found in 5 out of 10 WCs.[[109]](#footnote-109) Harpic was not based on washing soda, and it was not based on a chemical that could readily be bought in a generic, unbranded form from the chemist. Harpic was a powder of acid sodium sulphate and when dissolved in the toilet bowl it gave a solution of sulphuric acid. This was particularly effective at removing limescale, which dulled the porcelain bowl and provided a rough surface for dirt to cling to. By removing the limescale, the acid was more effective than bleach, which might temporarily whiten the dingy finish but did not solve the problem of limescale and dirt's affinity for it. This information was not recounted to the user in adverts, which did not mention Harpic's relationship to sulphuric acid or even its particular action on limescale. The adverts described Harpic as the only product that could reach into the bend where the toilet brush could not and that simply leaving it to work, without scrubbing or effort, would result in a glistening, deodorised and disinfected toilet bowl. The 1928 *Harpic Home Book* described “foreign incrustations” rather than limescale and assured readers that it “contains no scheduled poison and is therefore perfectly safe” as opposed to the “dangerous acids” employed before Harpic was available.[[110]](#footnote-110) That in 1966 the ingredients and actions of the cleanser were explained by manufacturers Reckitt & Sons to their advertising agency JWT in a confidential letter suggests that the general public were in the dark about the active ingredient of Harpic.[[111]](#footnote-111)

Harpic was introduced to the market in 1921 by the Harpic Co. who initially sold the powder in cardboard cylinders which were degraded by the acid product. This was quickly rectified by using metal cannisters instead. In 1924, Reckitt's & Sons attempted to purchase the company, but considered the asking price too high. Harpic Co. changed the lid to a sprinkler in 1925, to control the flow of the powder and appear less wasteful. Keen to have such an effective cleanser that had already shown itself to be a favourite with users, by 1932 Reckitt development chemists had developed a potential competitor to Harpic, which placed them in a position to negotiate a more appealing price to buy Harpic Co.[[112]](#footnote-112) For the entire duration of the period this thesis is concerned with, the 1930s to the 1980s, Harpic has been owned by Reckitt's & Sons, later Reckitt's & Colman, and has been a staple product in the domestic bathroom. Harpic advertising changed very little between the 1930s and the 1980s, using highly focused campaigns which concentrated on toilet bowl cleanliness. This specificity was directly related to the chemical composition of Harpic, the acidity of which rendered it suitable only for cleaning “lavatories, or other porcelain or vitreous china articles”.[[113]](#footnote-113)

Despite this acidic property, Harpic was never named in malicious attacks, perhaps not being employed due to the low profile of the active chemical in this product. The chemical’s properties might have come under more scrutiny if Harpic had been involved in accidents where it had been ingested in mistake for something else, but the very well suited containers did not cause the toilet cleaner to be transferred to other containers where it could be mistaken for any edible substance. Even if users had known that they were working with an acid, many would not have known that mixing it with a bleach was dangerous because it released chlorine gas. Some users who believed their combinations made the products work better, the eye-watering fumes that came off signifying their strength and therefore effectiveness.

While most users would have been expected to quickly notice and avoid noxious gases such as chlorine which is very distinctive, all users are different. In 1945, a Birmingham housewife with a damaged sense of smell who, while cleaning her bath mixed half a pint of Parazone with a generous 2oz Harpic, only narrowly escaped serious harm, prompted her doctors to experiment with that mixture to observe the evolution chlorine.[[114]](#footnote-114) They did not call for any further labelling or other action, suggesting that the warnings might be considered reasonable. Yet this type of accident continued. In 1963, of 33 accidental gassings recorded by the National Poisons Information Centre (NPIC) at Guy's Hospital, most of the household cases were from mixing Harpic with a bleach.[[115]](#footnote-115) The trend continued, with 40 out of 45 inhalation accidents reported to the NPIC between 1974-75 relating to liquid bleaches and lavatory cleaners, alone or in combination.[[116]](#footnote-116) The relatively high frequency of domestic chlorine gassing prompted a group of epidemiologists to survey the information given on domestic lavatory cleaners. They found that all twelve different brands bought in their local shop instructed users not to mix cleaning chemicals, but only two (Domestos and Vortex) explained the consequences of mixing.[[117]](#footnote-117) Inhalation of chlorine was not always accidental, as in the case of a 41 year old electrician who mixed Harpic and bleach to inhale the resulting gas for what he described as its pleasurable effects. After several months of this practice, he presented himself at the doctors with severely reduced lung function, worse than was seen in workers chronically exposed to chlorine.[[118]](#footnote-118) However, despite the potential for fatal effects, Harpic appears not to have been used for that end deliberately between the 1930s and 1980s.

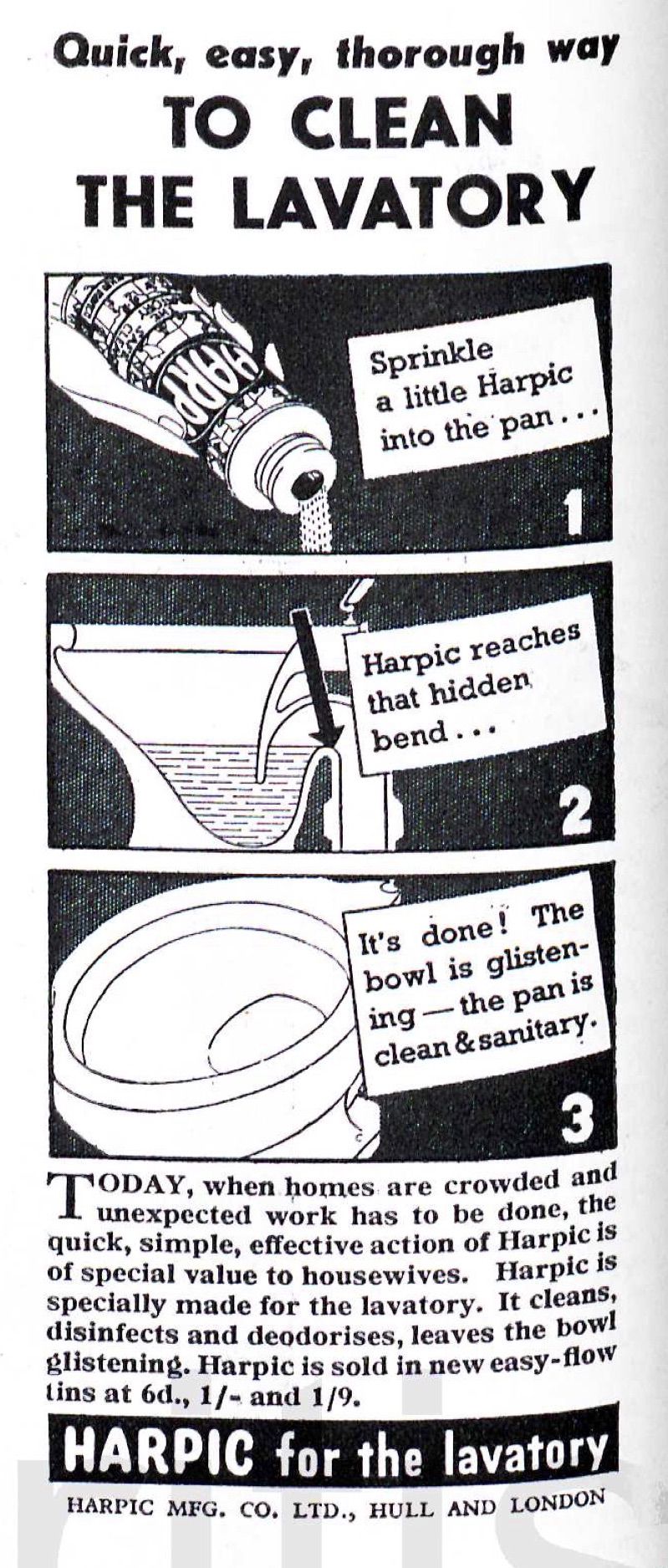


Figure : 1940 advert Harpic as labour saving

Information about the importance of using Harpic alone was reserved for Harpic's packaging and not mentioned at all in its advertising (see Illustrations 3 and 4 as examples), which emphasised that it was the “safe” cleaner. While the accompanying images and exact text varied a little, the adverts always informed the user to expect a “glistening” “shining” “scrupulously clean” “safer than ever” toilet bowl, to use Harpic daily, while emphasising that it was easy and fast to use. The technical drawing of the toilet showing the hidden bend was a staple feature of the adverts which lent them an aura of scientific credibility. In 1950 perfume was added to the product, though existing users were reassured that they could still get the “familiar kind”. Safety of the product user was not mentioned and the manicured hand holding the canister was not sheathed in a rubber glove, but the safety of the porcelain and the future safety of bathroom users through the disinfectant properties of Harpic were noted.

The user imagined by Reckitts was the housewife, explicitly stated in 1940 and reinforced in their adverts by an image of a feminine hand sprinkling the product into the offending toilet, and the notion of one person in charge of provisioning and enforcing household standards. Regular advertising in women's magazines such as *Good Housekeeping* magazine and daily newspapers such as the *Daily Herald* ensured that messages about Harpic reached a wide variety of women. In the 1950s, advertisements showed a smiling hulk-like man holding the canister of Harpic, but it was not an indication of who would do the work, only that Harpic was as strong as this man with enormous biceps.



Figure : The strength of Harpic is depicted by the image of the strong man, 1955 GH magazine.

While schoolboys might not be the usual audience for toilet cleaner advertising they certainly picked up the gist, and the brand name became an unkind nickname for comedian Simon Fanshaw's teacher: 'We called him Harpic for the simple reason he drove you clean round the bend'.[[119]](#footnote-119) By the 1980s, Harpic was very much a household name in Britain, and used as shorthand for disinfectant or indeed almost any cleaning product, rather than any great understanding of its properties or best uses. Writer Robert Nye recalled his mother in the 1950s wiping down books from the public library with a handkerchief rubbed in Harpic.[[120]](#footnote-120) This snapshot of Mrs Nye who, at least in the eyes of her son, used Harpic not only for cleaning her home in the conventional methods, but also in a way that she believed protected her home, and her family within it, from germs shed by unknown people and their potentially grimy homes that could be borne by the library book. Harpic was evoked when tasting unpleasant foods,[[121]](#footnote-121) and when describing a not very good wine “Jacob's Creek … could to be to wine what Harpic is to toilets”.[[122]](#footnote-122)

The ubiquity of Harpic meant that when Reckitt & Colman were mentioned in media reports of the company's activities, Harpic was routinely given as an example of one of their products that the audience would recognise. Harpic was deemed an anomaly, along with the company's other household cleaning products like Brasso and Windolene, that went against economic theorists' predictions of product life-cycles as it continued to sell well from the 1930s into the 1980s.[[123]](#footnote-123) What these economic theorists perhaps did not take into account was Reckitt's commitment to understanding their product users.

That Reckitt’s were interested in their users’ views can be seen in their choice of advertising agency, JWT, who had a well established research department. By the 1950s Reckitt & Colman were serious enough about the benefits of market research that they had their own unit, one of the very few industrial ones. Users and non-users were surveyed extensively, considering age, family composition, economic status, housekeeping habits and where applicable which competitor or alternative products they used instead of Harpic and why. When Reckitt & Colman recruited for their Commercial Research Department in 1964, the department was described as having its own nation-wide team of interviewers and modern data processing equipment.[[124]](#footnote-124) Their highly gendered person specifications indicate that Reckitt's valued women's communicative ability to draw out useful information from housewives.[[125]](#footnote-125) Reckitt's connection with their product users should be considered an important factor in the successes of the company to develop and market a range of household chemical products that were very well received.

### Carbon Tetrachloride

Carbon tetrachloride (CTC) has been chosen for a case study because it was available before 1930 as both an unbranded product obtained from a pharmaceutical chemist as well the “active” ingredient in a number of branded consumer products, Thawpit cleaning fluid being our principal example in this chapter. Carbon tetrachloride was first synthesised in 1839, by the French chemist Henri Victor Regnault through reacting chloroform with chlorine, which made the chemical of interest to historians of medicine.[[126]](#footnote-126) Historians of chemistry have tended to focus on the changes to CTC's nomenclature, and its experimental role in the development of organic chemistry.[[127]](#footnote-127) This is the first time a history of CTC from the view of the domestic user has been attempted, although military and industrial uses of the chemical have been comprehensively studied.[[128]](#footnote-128)

When CTC was manufactured on a much larger scale as a result of chemical companies searching for an outlet for an excess of chlorine from around 1910,[[129]](#footnote-129) the clear, colourless liquid with a characteristic sweet smell became more widely used in domestic settings.[[130]](#footnote-130) As this thesis is concerned with the period between the 1930s and the 1980s, the status of CTC in the 1930s as a domestic chemical can be considered established, like washing soda and Harpic, but unlike these chemicals, the story of CTC ends with it being actually removed, not just displaced from the domestic market. CTC had been embraced by domestic users as an effective grease remover, promoted as a safer option to using benzine, as it would not catch fire. The vapours were initially described as no more dangerous than benzine, although they could make the user “drowsy” yet by the 1970s CTC was considered the most toxic option of the cleaning fluids then available.[[131]](#footnote-131) As a chlorinated halogen which were becoming implicated in ozone layer destruction at this time, CTC was also pinpointed as a hazard to the environment. The discovery and marketing of other newly synthesised chemicals that were less poisonous, not flammable and highly efficient stain removers began to replace CTC. In addition to this functional replacement, global regulatory systems meant that from the 1970s CTC began to be formally phased out of consumer products to protect the ozone layer, groundwater and human health. CTC has been demonstrated to be carcinogenic in experimental animals, although occupational and population studies of humans are inconclusive, so as a precaution it is considered a potential human carcinogen. Since 2002 it has been banned from consumer products.[[132]](#footnote-132)

Although this chapter is mainly about housework, CTC provides the opportunity to look at some other uses of this chemical in the British home. From 1903 CTC found favour among fashionistas who freshened their hairstyles with the chemical, initially at the hands of professionals in environment of the hairdressing salon, but then also at home by themselves.[[133]](#footnote-133) This makes it one of the earliest uses of CTC in the home. Exactly how the notion of using CTC for cleaning human hair came about has not been clear. It was not recommended in Thawpit's promotional leaflet, though an extrapolation from caring for fur coats and stoles could lead an imaginative user to try it on human hair. Avoiding a full wet wash which before the widespread installation of domestic plumbing and reliable hot water systems might necessitate heating, transporting and disposing of water, as well as the subsequent potentially chilly drying period would certainly have been a benefit of using CTC as a “dry” cleaner for hair.

However, the nature of the chemical and its anaesthetic, cardio-depressant effects meant that this was a fairly short-lived use. During the inquest following an accidental death of a customer having a dry shampoo on their premises in 1909, Harrods hairdressers stated that they had been using CTC without incident for six years, which they estimated to be a total of "20 or 30 000" dry shampoos. This was clearly an expert space, yet when referring to the fatal accident involving the dry shampoo, the hairdressers were framed in the courtroom by medical doctors as non-experts. While the hairdressers may have known how to get results that pleased their clients, they did not have the same knowledge about CTC as the medics. This was highlighted by the way in which the hairdressers attempted to treat the stricken client who was overcome by CTC during her hair wash, by lying her on the ground to recover. To the scientific men who understood that CTC vapour sunk to the ground, this was the worse possible place to put the patient, who would be further exposed to the suffocating substance. The medics hypothesised that the peculiar, cooling sensation of CTC poured over the scalp, the absorption of the chemical through the skin and the inhalation of the anaesthetic fumes all contributed to the unfortunate woman’s death.[[134]](#footnote-134)

There was no indication of the prevalence of this as a domestic practice but by 1934 the British Medical Journal was able to report that dry shampooing with CTC had stopped as other, safer (unnamed) products had become available.[[135]](#footnote-135) However, it was still employed to clean removable hair pieces worn for personal or social reasons: to hide thinning, balding or alopecia and switches simply worn for styling variety and fun.[[136]](#footnote-136) Using cotton wool balls soaked in CTC or dipping the hair into a small saucer of solvent was safer than having it poured over the scalp, which gave a peculiar cold sensation and it reduced the user's close contact with the chemical so they would be less likely to absorb it through their skin. In 1969 a nurse in Glasgow, as advised by a chemist’s assistant, cleaned her human hairpiece but neglected to properly ventilate her room. In writing up the report of her poisoning and recovery for the *BMJ* Ronald Weir noted that ventilation was not emphasised on the specialised hairpiece cleaner he found containing CTC, nor by hairdressing schools which he identified as the indirect source of wig cleaning behaviour, and in this case, by the vendor.[[137]](#footnote-137) Despite her medical training and contact with a chemist’s assistant these did not help the unfortunate wig cleaner.

The proposed removal of CTC and CTC based products from the market does not appear to have publicly disturbed the wig using population; there were no comments about alternatives or concern about what users were exposing themselves to, and theatre manuals continued to recommend cleaning wigs by dipping them into large containers of CTC well into the 1980s, without warnings about ventilation or toxicity.[[138]](#footnote-138) Surprisingly, a recently revised edition of *Science for Hairdressing Students* listed CTC as a grease solvent which might be encountered, though it warned that all solvents should be treated with respect and used “in plenty of space”.[[139]](#footnote-139) The mass production of synthetic wigs in the 1970s was accompanied by care regimes that involved dunking in gentle detergent shampoos rather than dry cleaning methods, as well as introducing a sense of disposability and reducing the necessity of cleaning.[[140]](#footnote-140)

## Fire extinguishers

The other example of CTC used in the home is when it was contained within fire extinguishers, where more often than not it was hoped to never actually be deployed. The same heavier than air property of CTC vapour demonstrated in Harrod’s hairdressing accident also meant that it was fatal to fire. As a liquid, CTC cooled the fire and denied it oxygen, plus the vapour sank to the ground where it blanketed the fire and further starved it of oxygen. Extinguishing devices came in a variety of forms, including the now familiar pressurised extinguishers, produced by various manufacturers from 1918. These brass canisters were also joined by fire grenades, in which the chemical was visible in glass balls or tubes, often hung on the wall in a purpose-built bracket. Some were quite plain globes, others more elaborate and aesthetically pleasing, which has ensured that some have been collected by enthusiasts. Vogue magazine carried a photograph and description of a swan-shaped grenade in 1947.[[141]](#footnote-141)

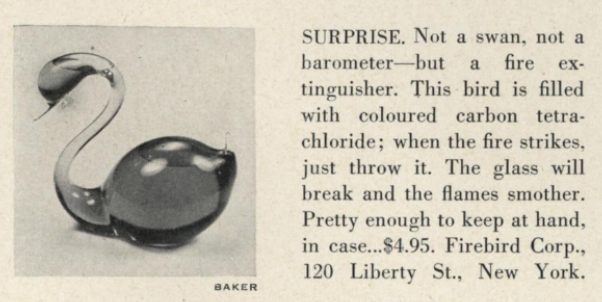


Figure Elegant, decorative CTC fire grenade



Figure Firex extinguisher in the Science Museum collection, which shows some CTC inside.

The grenades were sealed shut, preventing evaporation of the volatile chemical, but also ensuring that the CTC was only used for fire prevention rather than extracted from the grenade for any other domestic purpose. These sealed glass vessels were to be thrown at the base of a fire, to break the glass and release the liquid.

CTC could be used to put out any kind of fire, which was useful in the rapidly modernising British home where fires could be started by candles and oil lamps, solid fuel fires or gas, electricity, or even incendiary bombs dropped during WWI and II. Due to its non-conductive nature it was particularly useful for electrical fires,[[142]](#footnote-142) although CTC extinguishers have not featured in histories of domestic electrical technologies. Historian Emily Hankin's work on domesticating electricity as the National Grid grew included tripping over flexes and electrocution, but did not raise electrical fire risk in the home, for instance from overloaded sockets.[[143]](#footnote-143) Graeme Gooday's work on the history of electric lighting explains that the electrical companies' focus on the safety and lack of worry compared to the fire risks from gas in the home, meant the possibility of domestic electrical fires was downplayed.[[144]](#footnote-144) This should not be surprising, as the emphasis on the safety of electricity does not lend itself to thinking about the terrifying damage that an electrically started fire could wreak, or the problems associated with treating it like a normal fire. One of Pyrene's early British adverts from 1919, specifically highlighted children at home as requiring protection (figure 9). The fire extinguishing liquid was not named, but neither was it obfuscated by any other terms or descriptions. The user was assured that it would not damage fabric or furniture when the efficient and easy to use extinguisher put out the fire.[[145]](#footnote-145)



Figure : A domestic scene where the mother could use the extinguisher to save her children, self and home.

A letter to *The Times* shows that CTC extinguishers were not regarded by users as completely trouble-free. Alexander Duckham wrote in 1934 that his experience as a chemist meant that after waking feeling unwell, he could identify the smell in his bedroom in which he hung “a standard type of car fire extinguisher” as that of CTC. This phrasing confirms that the active ingredient of the fire extinguisher was not made obvious to the user on the object itself, and that someone untrained in chemistry would not be able to locate the source of the problem as the fire extinguisher, so Duckham took on the duty to translate his experience for people with less chemical expertise.[[146]](#footnote-146) He did not consider that people may have encountered CTC outside a chemical laboratory, despite recommendations to householders that they could use CTC as a domestic grease solvent beginning from the mid to late 1920s. No further comment was made on the incongruity of a product which promised to protect material objects whilst potentially poisoning the user.

Pyrene's British promotional material in the 1930s ignored the domestic aspects of fire prevention and focused instead on the material and financial aspects of cars and property, rather than lives or a sense of security. Although air raids in the First World War stimulated the promotion of Pyrene extinguishers for domestic use,[[147]](#footnote-147) this was not repeated in the face of greater devastation wrought by more powerful bombs in WWII. Recurrent raids and associated fires which made water and a stirrup pump a more convenient, cheaper option to recharge when repeatedly faced with fires.

Pyrene's later British advertising pamphlets focused on non-domestic masculine images, depicting fire extinguishers in soldiers' vehicles, in military aircraft, in racing cars, and called on the authority given to the extinguishers by their visible presence in public institutions and on public transport (Figure 10). However, in these advertisements the chemical name was never given and instead referred to the “special liquid” or “fire killing liquid”. This gap in knowledge would invariably be filled by the Pyrene sales representative, as users could be expected to work out from the description that it was safe for use on electrical fires, that it was non-conductive and would not freeze, as well as should not be used in a confined space that these were all clues to this mystical “fire extinguishing liquid” being CTC.[[148]](#footnote-148)





Figure Pyrene advertisements showed who its users were

It eventually became clear that CTC was not appropriate to use in all fire situations because when in contact with hot metal, it produced phosgene gas and chlorine. Although this was reported in the medical press from 1946,[[149]](#footnote-149) it was not picked up on in the mainstream news, and therefore the general user population, until many years later. Newspapers reported on industrial accidents where this happened in the 1960s, such as those at a Sheffield steel mill[[150]](#footnote-150) and Leeds engineering works.[[151]](#footnote-151) These incidents were not explicitly linked to to domestic fire extinguishers, although relevance to the British home was hinted at by the definition of a confined space being given as "a cellar or living room" and saying that there are a million of this type of extinguisher in use throughout Britain,[[152]](#footnote-152) which suggests their presence in private homes as well as in public transport and industrial situations. The generation of phosgene in a domestic fire was far less likely than in an industrial situation, but the presence of CTC vapour in a confined space was still dangerous. JW Hughes wrote to the BMJ to identify fire extinguishers and the generation of phosgene as the source “much of the doubt” about CTC’s toxicity and suggested all extinguishers be emptied so that the contents could be used “as a reasonably safe solvent”.[[153]](#footnote-153)

## Household cleaning

In comparison to hairdressing and firefighting, advice to use CTC for household cleaning became widespread somewhat later, between the mid to late 1920s and the early 1930s. That CTC was not very widely used is confirmed by its absence from the fifth edition of Wynter Blyth's book on poisons published in 1920 which contained many other chemicals commonly found in the British home.[[154]](#footnote-154) The mass production of CTC, discussed briefly at the start of this section, provides a clue as to its relatively limited uses before the late 1920s, so while technically it was a very useful grease remover it would only become used for household cleaning tasks once it was manufactured at a volume that made it available at a suitable cost for domestic uses. Unbranded CTC was presented in 1926 as “readily procurable” but without indication of from where, though housewives were familiar with asking their chemist for such items.[[155]](#footnote-155)

A branded form of CTC, Thawpit, was created by Captain Thomas Thorpe in the 1920s. Although “BMG” in Somerset wondered whether the name Thawpit stemmed from “thawsty”, a dialect word meaning nauseatingly dirty,[[156]](#footnote-156) it is likely that the product was more ego-centrically named for its similarity to Thorpe. Indeed, Thorpe-it sounds very similar to Thawpit, which was what adverts in 1928 encouraged users to do: “Thawpit your ties and suits”, using the very brandname as a verb.[[157]](#footnote-157)

Undated leaflets produced by Thawpit probably in the 1920s set out the ways in which the solvent could be used as a multipurpose grease remover. The leaflet extolled the potential for general household uses including “removing verdigris from geysers”, as well as the masculine cleaning activities of polishing car headlights and removing tar from car bodies or tobacco pipes. This multipurpose appeal could be expected to sell Thawpit to a wide range of users, who would rapidly use up the product then have to buy more if they used Thawpit in all the situations advised by the leaflet. No doubt CTC was effective at these tasks, but when compared to more readily available, cheaper alternatives that were as effective, the product came across as trying to be too much, even wasteful.

In 1934 Thorpe engaged advertising agency J. Walter Thompson (JWT), the same user-focused agency that Reckitt’s hired to handle Harpic, to manage promotion and labelling of Thawpit.[[158]](#footnote-158) Keen to understand what Thawpit was, as well as what it did, JWT asked for more information on the grease remover. Thorpe explained that it was the same chemical in fire extinguishers.[[159]](#footnote-159) Although Thawpit's labelling and informational leaflets did not state what the cleaner actually was, the characteristic odour, qualities and precautions to take when using it identified it to a chemically knowledgable user as being CTC based. Letters between Thomas Thorpe and JWT reveal that Thawpit cleaner contained CTC made by Albright & Wilson.[[160]](#footnote-160) Thawpit was pure CTC, unlike other CTC based products which contained detergent, or were a mixture of solvents.[[161]](#footnote-161)

Looking to understand Thawpit’s users, JWT instigated regular market surveys of existing customers and asked about textiles in particular, as well as more general grease removal. JWT found that very few users cleaned whole garments at home, they used Thawpit for spot cleaning and generally bought it when they needed it, or slowly used a bottle they kept on hand. Their research suggested that focusing on textiles, rather than all the other household uses for Thawpit, would be beneficial. Broader market research carried out in both in the UK and US on dry cleaning revealed that most domestic users did not realise the process involved total immersion in a liquid and did not know that this liquid could be reused after the removed dirt settled as sediment.[[162]](#footnote-162) Although Thorpe wanted JWT to promote home dry cleaning which would use a larger amount of Thawpit, the agency resisted this request and found a compromise that would not confuse, or endanger home users who attempted to work with a chemical that could make them “drowsy”.[[163]](#footnote-163)

JWT aimed to increase the frequency of cleaning, therefore the rate that CTC was used up and bought again. They wanted to change user behaviour, by moving away from spot cleaning stains to encouraging users to give a “going over” to a whole garment before it got really dirty, which meant being ready to refresh the entire surface. Users were instructed to pay particular attention to high-wear, visible areas such as collars, cuffs and shirt fronts. Clothing rationing was seized on by JWT, as well as Thawpit’s competitor Beaucaire, as both attempted to persuade users to choose their products to make clothes last longer and save clothing coupons.[[164]](#footnote-164) JWT developed a very utilitarian campaign which showed either a men's suit or a women's outfit on a hanger,[[165]](#footnote-165) and one with an emotional tagline “X marks the spot” which showed a man aghast after noticing dirt on his date's clothing, which quashed any romantic feelings or future (Figure 11 for both).[[166]](#footnote-166) This campaign capitalised on social anxiety and used the well-established advertising trope of suggesting that others will scrutinise and rapidly judge you on the state of your attire. These adverts included the distinctive hexagonal bottle, along with a description of how to apply it using a piece of fabric, which was described as a rag in the advert directed at men's suits and as a clean cloth in the advert which directly addressed women.



Figure JWT's functional appeal to men and their emotional appeal to women

Taking a closer look at that hexagonal bottle can also give clues to how Thawpit’s container determined how the product was used at home. Illustrations 8 and 9 above include an image of the bottle, which was glass, colourless, clear, and distinctively hexagonal, stopped with a cork. The cork was later replaced by a screw top. Two sides of the bottle were ridged, a well established tactile and visual signal used on bottles containing poisons and this message was reaffirmed by the embossed phrase “Not to be taken”. A warning to not breathe the vapours was included on the paper label fixed to the remaining three smooth sides of the bottle, which instructed users to keep the bottle tightly corked (in order to prevent evaporation and wastage) and to avoid using it in confined or unventilated places. Although Thorpe had wanted users to use up Thawpit fast, he presented the solvent in a volume that facilitated meagre usage, and the narrow bottle neck made it hard to return used solvent to. Nevertheless, this simple bottle afforded users more freedom to use the solvent in other ways if they wanted to.

This relative freedom can be compared to applicator tips, a packaging innovation that reinforced a single use for the product, that it should be applied to spots on clothes, rather than applied to a cloth or emptied into another container (Figure 12). Cloths had been implicated in child fatalities, a six year old boy had been using CTC on a cloth to clean his model railway tracks and “fascinated” with the smell, took the cloth to bed with him and suffocated. The cloth enabled him to get into the crevices of the tracks, for which a flat applicator tip would have been unsuitable.[[167]](#footnote-167) If a user accidentally knocked over a bottle of solvent, the applicator pads also stopped so much from escaping.[[168]](#footnote-168) Competing brands had pads fixed to the top of their bottles while Thawpit sold applicator tips separately. In a Boots catalogue the price of Thawpit was listed as 1/9, or 6 shillings for a larger size, with the separate cleaning pad to fit the small bottle as 1/3 and 2 shillings for the large one. Competitor Dabitoff, with its built in cleaning pad, was priced at 2 shillings sixpence.[[169]](#footnote-169) This presentation and price differential allowed Thawpit to appeal to users who either did not want or need an applicator pad, or were able to reuse them. These packaging choices gave users more options and freedom in how Thawpit could be used, rather than only being for removing grease spots on textiles.



Figure Taken from an internal Boots magazine (1954), this image shows Thawpit’s new packaging to clean directly with the pad attached to the bottle, although the recognisable hexagonal shape was retained..

Functional packaging could also become a reason for purchasing the branded products and work to avoid accidental poisoning, as when CTC was stored in other domestic bottles accidental poisoning was a risk, as in the case of a young girl who drank CTC which her father brought home in a juice bottle. Depending on the dose and the individual, CTC ingestion was not necessarily fatal and the girl in the example survived. When victims of accidental poisoning also drunk alcohol either previously or afterwards, such as the Naval officer who mistook CTC stored in a gin bottle then went out drinking, the damaging effects on the liver and kidneys were exacerbated and these cases were more serious.[[170]](#footnote-170) Improved labelling of CTC cleaning fluids was discussed in the Houses of Parliament in 1965, which appears to have been a turning point in British awareness about the safety of CTC despite the long precedence of accidents associated with the chemical. It also seems to have been the only attempt to influence this set of household chemicals, which were not subject to any other formal regulation with regards to their composition. The Home Department requested that labels on this type of cleaning fluid added the advice to keep out of reach of children and noted that most manufacturers already carried warnings against inhaling the vapour or using it in a confined space.[[171]](#footnote-171) Still, in the 1970s, not all manufacturers listed the ingredients of cleaning fluids, which led domestic advice manual author Moore to suggest they treat any nonflammable solvents as CTC, that is, with the “utmost care”.[[172]](#footnote-172)

These warnings about inhaling vapour were directed not only at those who might mistakenly gulp the liquid or asphyxiate themselves as they removed grease, but those who deliberately sniffed the vapour for pleasure. Solvent abuse will be examined in more detail in the chapter on Users, but CTC was by adults, teenagers and children, which periodically came to light when fatalities occurred, whether from accidents that occurred while high or from asphyxiation with the chemical.[[173]](#footnote-173) Author of a book of hints for the housewife, Leslie Keating, wrote in 1972 about the potential for domestic solvent abuse, and advised readers to discourage their children from such behaviour as strongly as possible, which included keeping domestic cleaning solvents out of reach.[[174]](#footnote-174) This type of warning, in a manual like this, is extremely rare.

The benefit of buying Thawpit over a bottle of CTC from the chemist was that the user also bought a great deal of information about how to best use it. For best results, CTC had to be applied in a particular way, to mitigate the development of a ring around the stain. The method of applying CTC could determine whether a user was satisfied or not with the result, which meant that manufacturers of proprietary dry cleaners worked hard to provide comprehensive instructions and keep them up to date with new synthetic textiles and fashions. Explanatory booklets full of diagrams accompanied their products and the same textual information appeared in household tips columns. This meant that instructions that accompanied branded goods were not necessarily the only way to become informed about how best to use it CTC. Nevertheless, satisfaction with the end result was a major concern to keep users loyal to Thawpit, and instructions were regularly revised in light of information from users.[[175]](#footnote-175) However, the reader of Thawpit's promotional material would have been in the dark about the identity of the miraculous fluid. Household hints articles and manuals sought to educate their readers to make economical choices when they referred to CTC, or unnamed proprietary chemicals, but they did often did not help their readers identify which brandnames they should look out for. This mismatch demonstrates how users were expected to be curious about new products and able to assimilate information from multiple sources, joining the dots and filling in the gaps for themselves to work out what was in proprietary products.

Household hints columns never presented CTC or an equivalent branded preparation as the only option, instead it was the final solution when the mark did not succumb to more common treatments of soap or ammonia.[[176]](#footnote-176) The prioritisation of simpler, more readily available methods in these recommendations also show that older methods were not rejected or even fully replaced when a new product became available to domestic users. Getting a mark out quickly, possibly with something already to hand was more important than exactly which chemical was used to remove it. Cost was another factor which tip writers took into account, offering petrol and benzine as cheaper, although flammable alternatives.[[177]](#footnote-177) The ready availability of petrol, either sold in tubes from tobacco kiosks at least into the 1940s, or obtained from cars meant that Thawpit had to be as easy to obtain in order to compete.[[178]](#footnote-178) Availability of petrol, or rather its rationing meant that Thawpit was promoted as the ideal replacement. Not only that, but it helped extend the life of clothing which was also rationed. JWT's advertising also emphasised the lack of smell and absence of fire risk inherent in using the cleaner, properties that without out actually naming petrol referred to the drawbacks of that option. We also know that smell was an identifying feature of CTC which was liked, so when JWT claimed that it did not smell, they meant the lingering, obnoxious smell associated with fuel. I did not find any evidence that British access to CTC was restricted during wartime, which is the opposite to the situation in the USA. Civilian supplies were severely limited so that barely sufficient volumes could be used industrially and militarily.[[179]](#footnote-179)

As well as stain removal, Thawpit was involved in a very large variety of alternative uses albeit by a minority of users. During JWT's market research users volunteered that they used it to remove tar and grease from skin, but also to remove nail polish, to prevent chilblains, or if they were walking a lot they rubbed it on the soles of their feet, plus it was used as a garden spray and on windows to keep flies away.[[180]](#footnote-180) No rationales accompanied these insights into these imaginative users, although it is surprising that users were willing to put this oil-stripping chemical on their skin which would dry it out. Although these off-label uses remained strictly as curiosities and were not encouraged or perpetuated through any promotional work, JWT's survey revealed the diversity of methods and products that people employed to remove grease marks and other stains at home (see Table 2). Market research, as well as less formal “asking round the office” also repeatedly found that Thawpit's main competitors were ammonia and petrol, rather than similar branded CTC-based products.[[181]](#footnote-181) There was some frustration and incredulity at JWT that housewives had not picked up on the non-inflamability of Thawpit, but this was excused by their personal experiences of having not caught fire before, or that they “do not hanker to clean near a naked flame”. The lack of awareness of Thawpit's main benefit indicates that fire safety was not the housewives' main reason for choosing it. Being able to buy the product at a number of different shops and being satisfied with the results were greater priorities.[[182]](#footnote-182)

|  |  |  |
| --- | --- | --- |
| **Other agents or methods mentioned by respondents used to remove grease in 1950** | | |
| **Chemical** | **Branded product** | **Other methods** |
| Ammonia  benzine  carbon tetrachloride  chloroform  oxalic acid  paraffin  petrol (including lighter petrol)  pine and ammonia  powdered magnesia  methylated spirits  salt  spirits of salts  turpentine  vinegar  water | Beaucaire  Cleenitoff  Clensel  Dettol  Domestos  Dry Magic  Eukleen  Goddard's Dry Process Cloth Ball  Hedley's Cleaner  Inaflash  John Lewis cleaner  Kenmal  Kleenit  Kleneze  Klenox  Klengene  Klo  Klosklene  Liquid Glass  Little Old Chap  Mel  Milton  Modene  Moval  Neufaline  Octin  Parazone  Persil  Renu  Restatus  Revyvit  Sisipinda  Spectoral  Spik  Sprim  Sposs  Susie  Triko  Vim  Woolworths cleaner  Zodil | Blue water  boiled ivy leaves  brown paper and hot iron  carpet soap  cloth ball  cold tea  dried bread crumbs  French chalk  Fuller's Earth  hot bran  tea leaves |

Table 2: The number of branded products is greater than both the unbranded chemicals and other methods using household items.[[183]](#footnote-183)

Table 3 is shows the grease-related advice extracted from a six page guide to stain removal in a 1975 *Good Housekeeping* (GH) magazine.[[184]](#footnote-184) Articles like this were regular features in GH and other women's magazines, and each gives a snapshot of the materials, knowledge and activities that might be be found in the British home. with their exhaustive breakdown of stain scenarios, the varied approaches and the almost overwhelming visual effect of the sheer volume of information laid out in column inches, act as a proof of the complexity of ordinary, everyday domestic situations that a user would face. Succeeding in this complex arena with so many “wrong” choices to be made would give the user of domestic chemicals a sense of satisfaction. Twelve branded grease solvents were named, along with four unbranded options. These were French chalk, talc or Fuller's earth, suggested as absorbent agents, and the plant-based eucalyptus oil. These natural substances were not further explained, while the branded, chemically synthesised, solvents were accompanied by warnings. However, natural-ness was not an issue that was singled out in this encyclopaedic approach, and neither was any anti-chemical attitude apparent. Chemicals were to be treated carefully and respectfully, as useful aids “handy to have around” for the housekeeper devoted cleanliness. What is interesting about this list is that the chemicals referred to are household branded products, all the chemicals listed in Table 2 that housewives said they used in 1950 are missing.

|  |  |
| --- | --- |
| **Scenario: Grease, Fats, Oils** | **Method or *Proprietary Product*** |
| Table linen | Blot, wash at high temp |
| Other washables | Scrape, wash at high temp or use grease solvent.  *Polyclens Plus* or *Swarfega Hand Cleanse*r |
| Upholstery/non washables | French chalk, talc or starch alternatively  *Dabitoff Spray Spot Remover*, *K2R*, *Polyclens Plus* |
| Flat woven and velvet pile Dralon | *Thawpit* |
| Not Dralon or pile | Warm iron then e.g. *Beaucaire* |
| Leather shoes | *Meltonian stain remover*, or *Meltonian Mel Grease and Tar Remover* |
| Suede shoes | *Meltonian Mel Grease and Tar Remover* |
| Suede coats | *Delu Suede cleaning cloth* (do not use liquids) |
| Wallpaper | Warm iron over blotting paper followed by, eg *K2R* |
| Hessian | Aerosol grease solvent, sparingly |
| Carpets | Blot/scrape, then *Polyclens Plus, Goddard's Dry Clean or Beaucaire* |
| Tents and camping gear | *GoPro Tent Cleaner* |
| Beachwear | Eucalyptus oil or *Targon* |
| Hair oil on upholstered headboard | Dralons respond best to *Thawpit* or *Goddards Dry Clean* |

Table 3: This shows the continued proliferation of branded grease removers and that one product was not considered applicable to all grease removal situations. Thawpit was specifically recommended in only two scenarios, with eleven other branded alternatives named.[[185]](#footnote-185)

Although GH did not sanction it, even in 1971 petrol was used for domestic cleaning despite its economic advantage over branded products being “doubtful”. From a report compiled on explosives accidents which included the inevitable accidental fires associated with using petrol in the home, the gender of those involved in petrol-related domestic cleaning accidents was reported ambiguously through the use of words such as “occupier” and “user”. This contrasts with the abundant masculine descriptors employed when reporting petrol related accidents in the workplace. However, the compilation of mishaps provided an example of a man cleaning the carpets in his kitchen who had been seriously injured when the gas pilot light ignited the vapours.[[186]](#footnote-186) In these cases, the users had been cleaning diligently but had not fully thought out their whole situation, so had not noticed or not connected the presence of flames or fire with the possibility of petrol vapour ignition. It is interesting that no rationale, other than economic, was conjectured or sought regarding these accidents. JWT's market research showed that even in households with low income Thawpit was used, so cost cannot have been the only reason for using petrol. Thawpit advertising principally targeted women which could have been a factor if it meant men were put off using it, or made more likely to use petrol. Maybe these petrol users were trying to avoid what they perceived as the drawbacks of using CTC, such as the harmfulness of vapours in enclosed spaces and its increasingly dubious status as benign even when used carefully.

### Relative safety

CTC vapours had initially been deemed no more harmful than benzine, which professional dry cleaners understood to be a potent nerve toxin, but this was outweighed by the advantage of not being susceptible to catching fire.[[187]](#footnote-187) For other users who may not have been quite so well informed as the professionals, any dangers inherent in using the chemical were outweighed by its effectiveness at removing grease and the dirt carried with it. Domestic users wanted clean, long lasting clothes and so appear to have accepted the negatives along with the positives, although perhaps unknowingly so as the consequences of not following any warnings about ventilation and vapours were not spelled out. That users were capable of estimating that the consequences would be severe from the shorthand warnings not to take the chemical was demonstrated when CTC was deliberately ingested or inhaled in suicides. CTC was not classed as a “favourite” poison and by the mid 1960s a “perhaps diminishing” choice.[[188]](#footnote-188) In these examples, it is interesting to note that despite being generally described as a cleaning fluid in these incidents, those who engaged CTC with suicidal intent at home were male, a group typically thought of as using more violent methods, rather than domestic household cleaning chemicals.

CTC's lethality even inspired fiction and an example of this can be found in Leslie Charteris' crime story *A Cleaner Cure*, where this common household chemical was put to use. A medical doctor discussed CTC’s effects with the protagonist, The Saint, who expressed surprise with “Why aren't people dropping dead all the time?” The fictional medic conceded that “It's a wonder it doesn't happen more often. Everyone thinks carbon tet is harmless, but that's because it doesn't catch fire or explode”. The Saint mused about CTC as a murder weapon, and the medic pointed out that its use would be detected by visible effects on internal body fat.[[189]](#footnote-189) In practice pathologists tended to be alerted to CTC's involvement by its characteristic smell,[[190]](#footnote-190) but the appearance of CTC as a fictional murder weapon in shows that tensions regarding utility and lethality were perceived.

Fortunately, CTC seems only to have been used in anger against plants, rather than to deliberately harm other people. A local flower show in Macclesfield came to national attention when one of the competitors found the chrysanthemums he had been growing for the occasion poisoned by CTC fumes and suspected sabotage from a chemically knowledgeable opponent, as this flower appeared to be uniquely susceptible to the chemical vapours. CTC was described as an “everyday chemical” which was widely used in the town's silk industry,[[191]](#footnote-191) but did not mention any domestic uses of the chemical.

There was barely any discussion until the very late 1980s about the wider environmental potential problems with CTC in British newspapers or magazines, which neither called for, supported or bemoaned any proposed removal of CTC specific products, although it did occasionally report their disappearance for instance, from lava lamps.[[192]](#footnote-192) When CTC was singled out as a more powerful ozone depleter than any of the CFCs covered by the Montreal Protocol, the treaty which came into force in 1989 to protect the ozone layer, domestic uses were not mentioned. Where CTC was classed as an environmental pollutant in Britain, it was only ever in terms of industrial discharge, rather than connected to domestic use.[[193]](#footnote-193) While industrial scale uses undoubtedly dwarfed volumes used domestically, especially in light of CTC replacement by other chemicals, ignoring domestic users’ impact in the wider world fits with the focus on the individual taking responsibility for household safety that we have seen in this chapter.

This case study illustrated CTC’s transition from a chemical that was used professionally by hairdressers and dry cleaners, to one that was also used in the domestic sphere. It provided, and proprietary versions were marketed as, an alternative to flammable grease solvents such as benzene or petrol, but other than packaging, no changes were made to the chemical itself to make it safer for domestic users. Thawpit could be sold at many outlets, conveniently picked off the shelf, without the need to interact with a retail chemist as it was decanted and labelled. Another benefit of buying a branded product such as Thawpit was that it came with instructions on how to use it, whereas a bottle of CTC from a chemist did not. Surveys of Thawpit users and non users did not identify unbranded CTC as a main competitor, indicating that Thawpit users did not switch to the cheaper chemical once they learned how to use the product. When CTC and commercial products based on it were withdrawn British users were ambivalent, which was perhaps to be expected when there were so many alternative products and methods at their disposal (Tables 2 and 3).

### Conclusions

At the beginning of this chapter, categories of users were introduced in Neathercoat’s demands for greater household chemical safety. Through the case studies of chemicals and commercial products, we met all of them and found several new ones; expert, imaginative, pleasure seeking and experimental. We have seen that users shared their experiences of buying and using chemicals in the press and used this platform to question products. User needs and practices were gauged by market research carried out by advertising agencies or the manufacturers themselves. This research revealed that users were interested in effectiveness and value for money, and it was not unusual for users to be ignorant of the safety benefits of their choice or to use the product in a way that made it unsafe. Concern for long term domestic and global environmental consequences of product choices arrived so late to the consumer scene in Britain that they have not been discussed in this thesis, which has meant that discussion on chemical hazards has focussed on acute poisoning and asphyxiation. The difference that started to emerge between USA and Britain regarding slow-burn problems such as carcinogens is would be intriguing to research.

Although some chemicals used in the household were on the Poisons List and subject to controls, the majority of them were not and there were no calls for them to be more tightly regulated. This chapter has been light on regulation but this reflects a lack of British studies on domestic chemical products overall, which in turn relates to the vagaries with which material is retained or archived and how it is discovered and accessed. For instance, a search for “child proof” yields seven records across the whole Access to Archives (A2A) cataloguing system, “safety lid” just one, “safety cap” relates to engineering projects not household chemicals. American systems have been more thoroughly analysed, admittedly concerning cosmetics, pharmaceuticals and agricultural chemicals and still only vaguely applied to cleaning products. There are parallels with the development, approval, packaging and labelling of pharmaceuticals in Britain and this is definitely an area that should be further researched. Choosing different household chemicals for case studies, bleach for instance, would have opened up the opportunity to further explore packaging and the introduction of child resistant lids in Britain. Although the traditional starting point for archival research may not seem promising, the diversity of other sources that this chapter has used including archives not connected to A2A such as The History of Advertising Trust, has shown that more stories of users, manufacturers and regulators are waiting to be drawn out and pieced together. However, the focus of this thesis is on users rather than regulatory bodies and has shown that there was little demand from users for greater regulation, despite repeated serious accidents with burns from caustic soda, inhalation of chlorine gas evolved from improperly used Harpic, and fatalities from CTC vapour or after it was ingested as a liquid. The chemicals chosen for these cases studies did not stimulate any dedicated safety education campaigns about household chemicals in general. Solvent abuse was the only area to generate action from families of deceased users, which then resulted in widespread changes in labelling and retail, although not necessarily the chemical composition of products. When concern about chemicals in the home was raised, it was for unsupervised children, rather than the composition of commercial household cleansers and the safety of adult users, who were considered able to take responsibility and reasonable precautions.

Choosing branded commercial cleaning preparations over unbranded chemicals can be understood as a precaution. This chapter introduced the concept of relative safety, where the poisons rules meant that acids should be sold in distinctive ridged bottles instead of reused bottles or even domestic cups, where Harpic was an alternative to using and storing dangerous liquid acids in the home, and CTC or Thawpit was safer, at least in terms of fire risk, than using a flammable grease remover such as petrol. Thawpit could be safer than a bottle of CTC from the chemist because its applicator top prevented spills if it was knocked over. However, protecting users was not an altruistic act from the manufacturers. Potentially harmful products such as Harpic or Thawpit could be sold more widely by many unspecialised retailers like corner shops when instructions for use and safety were incorporated into highly branded packaging. They were convenient for shopkeepers to stock, and users grew accustomed to self service and not waiting for advice or warnings to be dispensed. Users were capable of deciphering shorthand warnings such as “not to be taken”, even when the consequences were not spelled out. They were educated haphazardly of what could happen through stories of misadventure relayed between acquaintances and through newspapers, although more educational campaigns were also run by tabloid newspapers, local authorities and organisations like ROSPA. Vagueness about which chemicals were the active ingredients of branded products appears to have been a non-issue among most users, to whom the function was more important. Pyrene’s insistence on referring to “fire killing liquid” rather than CTC is an example on the focus on function.

Users took cues and made assumptions from the product’s function as well as packaging and labelling: a product for washing up or laundering should be suitable to immerse hands in, products for cleaning very dirty ovens or toilets should be strong and therefore not suitable to get on bare skin. It was in the interests of the manufacturing company making a product that users could be expected to use comfortably, but how they established this remains uncommented on in company histories. The example of doctors experimenting for themselves to understand what happened in the Birmingham case of accidental gassing with Harpic and bleach suggests that this type of information was difficult even for professionals to find. Having the chemical name on the packaging may not have been meaningful, especially when common names vary. On the whole, domestic users knew and accepted that certain chemicals such as caustic soda could be harmful when kept or employed carelessly. However, users were not always clear about exactly how cautious they should be, or why. While the severity of consequences of mixing Harpic and bleach could have been explained, it is possible that not doing so prevented despairing users from interpreting this warning as a method for self destruction. Only when the lethality of such mixtures became fully labelled did this form of self poisoning become popularised in the 2000s.

Although despairing users interpreted warnings as instructions and were particularly hard to control, other user behaviours could be tackled through packaging. Packaging became a key feature in the successful use and indeed appeal of commercial products, such as Carbosil’s pouring packet, Harpic’s sprinkle-lidded canister, and CTC-based products applicator tips, when it directed or facilitated users’ behaviours. Where users were unrestricted by packaging design, such as the benign soda crystals and bicarbonate of soda, users’ constraints were conceptually and linguistically linked to the common names, washing soda and baking soda. Baking soda was sold in small amounts suitable for kitchen uses, occasional small stain removal, which meant that it was not substituted for washing soda which was used and therefore sold in greater quantities.

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